NOTES ON NEARCTIC HEPATICAE, XVI. New Taxa of Frullania from Eastern North America

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From 1949-1961 I published a series of papers with the above title. Nos. I-XV were published from 1949-1957, and nos. XVIII and XIX appeared within a few months of each other in 1961. No. XVI is here published and XVII will soon appear. These two "missing" papers have existed in manuscript since about 1959 and were not issued earlier because I felt that the taxonomic conclusions were based on an "uncomfortably" small sample. As the following will make clear, that element of discomfort has not been removed in the case of the four new entities here described in Frullania. I would prefer to leave these taxa rest in the limbo to which I assigned them for over two decades -- they, after all, do no harm there. However, preparation of the text on Frullania for the last volume of The Hepaticae and Anthocerotae of Eastern North America is now at the point where I have no alternative but to treat these taxa.

My reservations about the wisdom of publishing these derive from two sources: (1) the fourth taxon described, F. appalachiana, although clearly distinct, belongs to a complex so involved and impenetrable that I hesitate to add another species to it; I have even toyed with the idea that the plant is a "paleohybrid." (2) Two taxa described as new species are known only from single stations; one of these stations is now apparently destroyed. Considering the rate of environmental destruction in southern Florida, from where these taxa come, it may seem futile to describe them -- since there is no guarantee they can be recollected. However, as the southern Florida flora is a derivative lowland flora, these taxa should also occur in the Antilles. Unfortunately, habitat destruction, especially of lowland floras, is even more pervasive in the Antilles than in Florida! In Florida there is, indeed, a good chance that the sole station for Frullania taxodiocola may soon become a monoculture dominated by Melaleuca leucadendra introduced by the USDA -- an example of incompetence on the part of that agency that leaves the biologist almost speechless.

The four taxa are thus described from plants collected in the 1940's and 1950's, described prior to 1959 for the Columbia Univ. Press text, and not recollected since the 1950's except for F. sabaliana, which I found again in 1983. F. appalachiana, fortunately, is in no danger of extinction since it seems frequent at high elevations in the Appalachians.

1. Frullania (Diastaloba) taxodiocola Schust., sp. n.

Species F. obcoradatae-F. gymnoti affinis, ab ambobus differens

ut (1) dioecia, (2) minima, 500-750 μm latitudine in cauliculis principalibus, et (3) rhizoidea e marginibus folii efficit.

Type. On bark of Taxodium ascendens, in Cypress Head, just N. of Tamiami Canal, between Monroe Station and Ochopee, Monroe Co., Florida (RMS 42241, Dec. 25, 1958; FH).

F. taxodiocola is known only from the type which bears (on separate patches) ♂ and ♀ plants (no fertilized gynoecia have been seen), and a small second collection (RMS 42240) of sterile plants.

The small size suggests F. kunzei and F. donnellii, but it differs from these in criteria 1 and 3, above, plus in the oblique lobules, with orientation as in F. gymnotis and F. obcordata. F. gymnotis is a larger plant, 1-1.5 mm wide, which does not have incised lobules (in F. taxodiocola they are incised on the free outer margins to half the lobule length); it also lacks any evidence of asexual propagation (in F. taxodiocola scattered marginal cells are deeply pigmented, and are potentially rhizoid-developing; they presumably are associated with tardily and sporadically caducous leaves). The toothed bracts, small size, and the rhizoid-developing caducous leaves all easily separate the species from F. obcordata.

2. Frullania (Trachycolea) sabaliana Schust., sp. n.

Species F. inflatae cognata ut (a) inflorentiae autoeciae; (b) amphigastria basim versus cuneatim angustata; trigona parva ad parum nodosa, incrassatationibus mediis nullis. A F. inflata distincta ut (a) perianthium ad apicem in os fere erostratum angustatum; (b) plantae maturae e substrato discretae atque valde arcuatae; (c) plantae vigentes, 1.5-1.8 mm latitudine.

Type. On "knees" of Taxodium distichum, along Hillsborough R., Hillsborough River State Park, Florida (RMS 83-1003). The collection made in January 1983 is regarded as type, since the plants are more copious than those collected many years earlier at the same locality (RMS 33903, 33910a).

Found both on "knees" of T. distichum and (rarely) on trunks of Sabal palmetto. For a quarter of a century the species has been allowed to rest in limbo, since no other stations for it have come to light. In 1983 an especial effort was made to collect it at several levels above the Hillsborough R. Even though the common phases are found on Taxodium knees which are subject to periodic submersion, some collections, both from Sabal and from Taxodium bases, occur well above the zone of periodic submersion. Such plants are fulvous to slightly copper-colored; like the phenotypes along river margins, they lack inflated lobules of stem leaves. The unique perianth form and vigorous size both deviate from "normal" F. inflata, to which I once assigned it (in MS) as a subspecies. Hours were spent in 1983 trying to find "normal" F. inflata at the type locality of F. sabaliana -- without success [F. inflata is rare and local in Florida as a whole, and the

nearest stations for it I know are in O'Leno State Park and Highlands Hammock State Park, both in Florida]. In all cases, the F. inflata grows closely creeping and only the tips of perianth-bearing branches are a little elevated above the substrate. By contrast, the much larger F. sabaliana has a clear differentiation between creeping primary (sterile) axes and strongly spreading ultimate (sterile and fertile) branches -- lending that species a very different aspect. Both growth habit and size give it some similarity to young phases of Porella pinnata, which may occur admixed.

3. Frullania (Trachycolea) inflata var. stylifera Schust., var. n.

Varietas F. inflatae typicae similis nisi quod: (a) stylus conspicuus, ad basim 4-9 cellulis latus; et (b) guttae olei (5-8)10-16 in unaquaque cellula media.

Type. Whitewater River State Park, Minnesota (RMS 14205). Also known from two other collections from the same area (RMS14213, 14208).

Differing from "ordinary" F. inflata in the two above criteria and in the rather large underleaves, 2-3X as wide as the stem, 3-4-dentate to lobulate distally. In the last criterion similar to F. inflata ssp. illyrica (Grolle) Schust., comb. n. [Basionym: F. illyrica Grolle in Meyer & Grolle, Fedd. Repert. 68:101, 1963] but the latter has 2-3, rarely 4, oil-bodies per cell and these are relatively large (ca. 7 x 7-10 μ). In the large oil-bodies subsp. illyrica approaches F. sabaliana, but the latter has mostly 3-5 oil-bodies per cell, each to 4-5.5 x 7.5-10 μ in size.

4. Frullania (Trachycolea) appalachiana Schust., sp. n.

Species F. eborancensi pro parte maxima similis (amphigastriis ad basim cuneatis, unum dentem infirmum, ut plurimum utrimque habentibus; folis caducis copiose evolutis; cellulis trigona sinuosa grossa atque incrassationes medias habentibus), distincta, autem, ut (a) perianthium 3-5 carinas atque superficies interiacentes multum conspicue tuberculatas atque manifeste incrassatas habet; atque (b) lobuli caulicolorum principalium subquadrati, ore inaperto, magni (0.5-0.75 partes area lobulorum subiacentium celantes).

Type. Grandfather Mt., Avery Co., North Carolina (RMS 44601). Known from several other collections from the Southern Appalachians at 5000-6250 feet, in the Fraser Fir zone.

The species appears to be most closely allied to the common European-Macaronesian F. dilatata, which differs as follows: (a) asexual reproduction by caducous leaves lacking; (b) tubercles of the perianth surface caducous and allowing asexual propagation in this fashion.